ELECTRICITY on the FARM

The National Magazine of Rural Electrification

DECEMBER

Something New in Dairy Barns
Spray Rigs for Fire Fighting
"Shorty" Boggs on Brooding
Lemley Farm Production Goes Up
Good Wiring Is Safe—Part 4
Christmas Gifts of Food
Simple Christmas Cookies

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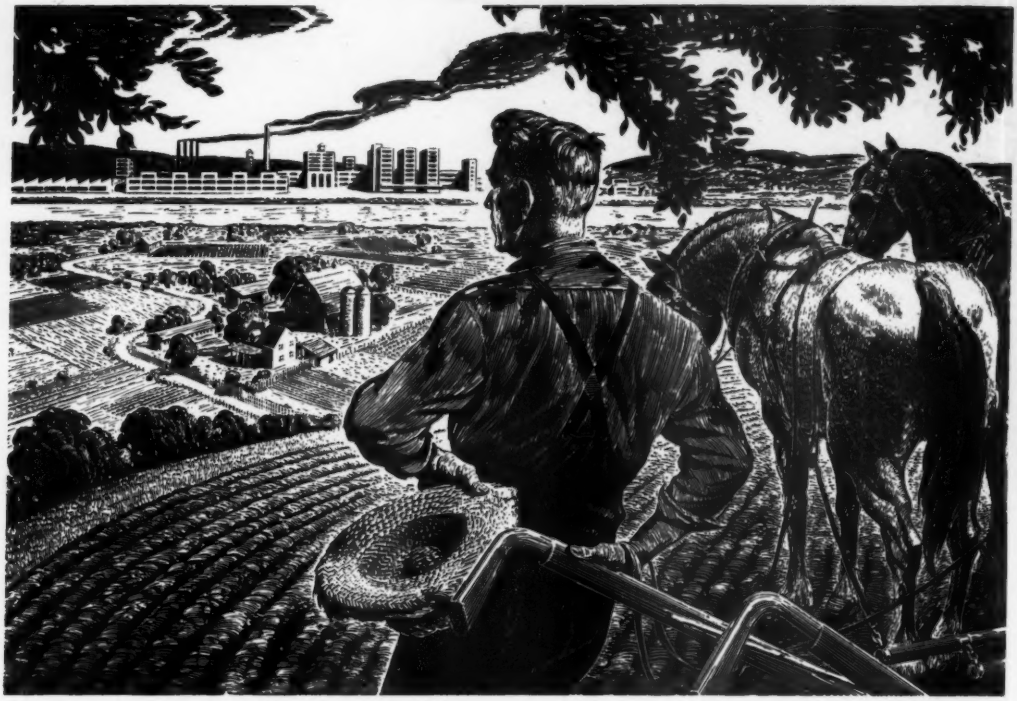
A CASE SHEPPERD MANN PUBLICATION



Ever think about Running a Factory?

IF you've ever run a farm or dairy or store, there are a lot of things about running a factory that you'd find pretty familiar. Things like working any and all hours, training green help, planning for months ahead without letting the planning interfere with the job at hand.

These are the responsibilities of management. And the peculiar American ability to meet and lick these problems means a lot today, both on the food-producing and weapon-producing fronts.

Ability to manage isn't picked up overnight. For good management is a skill just as much as good workmanship—learned the hard way.

It won't be forgotten overnight, either. For it is these men who, on farm and in factory, have actually produced the things from which our high living standard is derived, who can and will, by working together, give every American a more abundant life in the peacetime years to come. ***General Electric Company, Schenectady, N. Y.***

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YOU Might Have Saved 106 8-hour days in '43 with a MILKING MACHINE

This average saving in time (2½ hours a day), reported by America's 310,000 milking machine owners to the Bureau of Agricultural Economics, U. S. D. A., is more than enough to plow, plant, cultivate, and pick mechanically 100 acres of corn.

THE 310,000 owners of milking machines in this country know the value of this time-saving equipment in wartime. This year they saved 210-million man hours for other work. That saving in time is one of the key reasons for America's milk production holding its own so well in spite of farm help shortages.

IF YOU are the fortunate owner of a McCormick-Deering Milker, we urge you to take the best possible care of it. When new parts are needed, insist on getting Genuine IHC Parts from the International Harvester dealer.

What about NEW McCormick-Deering Milkers? We expect a substantial supply to be manufactured within the next few months. See the International Harvester dealer about the availability of new milkers and McCormick-Deering Cream Separators; also, about how to make application for an International Milk Cooler.

Whatever your problem — whether it is making your present McCormick-Deering Milker do for the duration or making application to purchase a new machine—you will find McCORMICK-DEERING QUALITY will see you through.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue, Chicago 1, Illinois

Editor's Chat

ADVENTURE IN BOONDOGGLING

Next on the program is the remaking of the agriculture of Europe and Africa on the American plan. The information is in the press. Presumably it will be easier to grow crops for our armies and for the conquered peoples close by than to ship them across the ocean. Some of the machinery has been shipped over. Boys who have been studying agriculture have been inducted into the army and are continuing their regular courses at taxpayer's expense. A quiet search is going on for hundreds of agricultural engineers to spread over foreign lands when the moment is right.

We believe in an increasing standard of living for all the peoples of the World. We believe in lending a helping hand when a groping hand is outstretched to us. We do not believe in shoving present day Americanism down the throats of helpless peoples. Some of it tastes and smells too bad, even at home.

Our present pampered labor dictatorships which go with anything the Government does, do not taste good. In lands of low-cost, uneducated excess labor, "What a killing!". While the methods of Europe and Africa may not be to my personal liking, those countries are much older than America, and it may be that long experience has fitted the system to the needs. They have twenty persons to our one. What would they do if schooled in American labor saving methods and our wastefulness?

We Americans in our youthful exuberance slash down the forests, wash away our surface soil, plow under our pigs, repeal the laws of supply and demand, start WPA's, borrow and tax ourselves for all we make so the Government may have it to spend. I am not sure that the older countries of Europe can stand our excesses or that they are set up psychologically to be happy with our fare. If we try to shove it down their throats we may choke them instead of nourish them, get ourselves all messed up, throw away our markets, and be sorry for what we have done.

It is a good thing for us to help our friends and even our fallen enemies. If we really want to help, perhaps we should use their seasoned yardstick, and not our four-tined fork. It is a time for thinking folks back on the farms to keep their shirts on, their pants up and their eyes open.

SO THEY ARE

An old gentleman was standing on the street in a western town when a newcomer stepped up to him and said, "You must have lived here a long time. Tell me what kind of people there are in this neighborhood."

In reply, the old gentleman asked: "What were the people like where you came from?"

"Oh, they were a mean lot; snobbish, unfriendly, and would take advantage of you whenever they could."

To which the old gentleman replied confidentially, "That's just the kind there are here."

A week later another stranger accosted the old gentleman. He was a friendly, smiling fellow and in response to the old man's question, "What were they like where you came from?" the stranger answered: "They were fine folks; neighborly, friendly, and would do anything for you when you were in trouble. I was sorry to leave them."

The old gentleman smiled, and looking the stranger straight in the eye, said: "Friend, that's just the kind of people you will find here."

So they are!

OUR CHRISTMAS WILL

We wish we might grasp each one of you by the hand and with a smile and a prayer wish you a Merry Christmas. For many, it will be a hard time to be merry. Still, we can do more for those who are about us, and those whom we would like to have with us, by being merry than by being sad. It is, despite the war, a time for good will, and for hope of peace.

In extending our greetings to you we want you to know that our *Will for good* to you at Christmas time starts in January. Ever before us when we edit ELECTRICITY ON THE FARM is the question "Will it help our farm readers?" If what we have printed—some experience of a fellow farmer, some discovery of an experiment station, some equipment of a manufacturer, some reminder from our staff—has enabled you to be happier this year, then your Christmas, and ours too, will be a merrier one.

—I'm proud I am a farmer!—

George Kable

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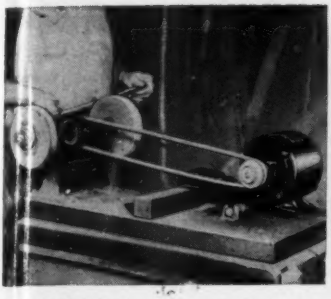
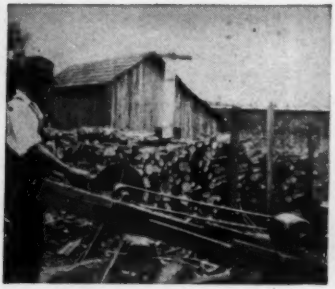
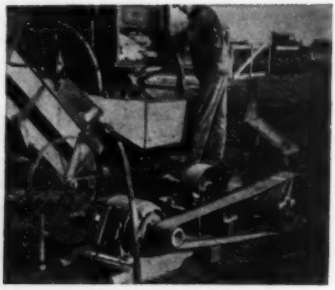
★ WARTIME STRATEGY ON THE FARM ★



TOOL GRINDER . . . Sharp cutter blade saves time, helps to increase food production. It's easy to sharpen tools on a power grinder. You can attach a *portable motor* to your grinder in a jiffy!



POWER WOOD SAW . . . No more back-straining toil in cutting your winter wood supply. Frees you for other more important work. Can be built in a single day. Costs little to operate.



CORN ELEVATOR . . . Plan now for storing your 1944 corn crop by building a corn elevator this winter. It will save you many hours of tiresome work, next fall, when every minute counts.

Get ready, now, for the Battle of 1944

NOW'S THE TIME . . . when other farm work has slacked off . . . to get your fighting equipment ready for the Food Production Battle of 1944.

Electricity can help you win this Battle!

A *portable electric motor* will provide many production shortcuts—help you replace farm labor you have lost. Any small electric motor can be made *portable*—in a few minutes' time, at practically no cost, and with little effort on your part.

It's easy to build a power wood saw . . . corn elevator . . . motor-driven tool grinder . . . and other farm devices that will save you time, labor, and money next year.

And don't forget to check over your food-production equipment. Sharpen and adjust all cutting blades. Repair or replace worn and broken parts. Clean and lubricate all bearings.

On this page are shown a few farm-production aids you can build in your spare time during the winter months ahead.

Many of these time-and-labor-saving devices for speeding farm work are described in the new "Farm Motors" book and 12 Westinghouse Farm Bulletins.

They are yours for the asking! Use coupon below.

TO HELP YOU WIN THE BATTLE OF 1944 . . .

Westinghouse offers *free* "Farm Motors" book that explains how to make small and large motors portable. Tells all about the selection, care, and use of electric motors on your farm.

Also, any or all of twelve *free* Farm Bulletins that explain how electricity can help get more work done on your farm in wartime. *Mail coupon today!*

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Please send me *free* "Farm Motors" booklet ☐ —also send *free* Farm Bulletins on the application of electricity to the subjects checked below:

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☐ *Cooking, Canning, and Preservation of Food* ☐ *Crops*
☐ *Home Improvement* ☐ *Poultry* ☐ *Dairy Cattle*
☐ *Swine* ☐ *Truck Gardening* ☐ *Rural Electrification*

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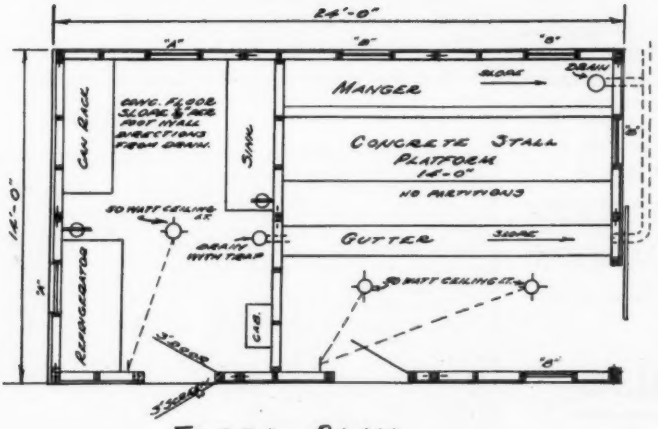
Address .....

SOMETHING NEW IN DAIRY BARNS

A Four-Cow Milking Barn for the Dairyman with a Small Herd, With Attached Electrically Equipped Milk House at Total Cost of $700—Barn May Be Pre-Fabricated—Boon to Milk Production in Southern States.

By **DAVID S. WEAVER,**
Head, Dept. of Agricultural Engineering,
North Carolina State College

FOR the first time in history milk has been made a required part of the diet of soldiers. Uncle Sam, putting into practice his long-time preaching, is purchasing enough milk so that every soldier in this country may have his share while in training. The demand for grade-A milk in North Carolina was so greatly increased early in this war that it did not look as though it could be met. An average of over 300,000 soldiers are in the military camps in this state. In addition, countless thousands of civilian workers have come into the state as the result of military activity. Where to get good, wholesome, fluid milk was a question which brought into play every interested agency in the state.



FLOOR PLAN

Large Processor Sponsors Barn

One of our largest milk processors, who is also owner of several large farms is Mr. George A. Coble of Lexington, North Carolina. Mr. Coble was buying milk to the extent of over 5,000 gallons a day for processing and delivery to military and civilian centers. According to state law, this could not be classed as grade-A unless produced in a barn and under conditions certified to by the State Board of Health. Mr. Coble's privately owned herd, representing an investment of many thousands of dollars, was producing grade-A milk which was handled in a building and with equipment representing but a small fraction of the cost of the herd. By contrast many small farmers had as much money tied

Upper: A four-cow milking barn and milk room built according to the accompanying plan in July, 1943, on a farm in Wilkes County, N. C. It was built up in sections, then hauled to the farm and erected.

Center: This is the type of concrete foundation which is put down before the barn is erected.

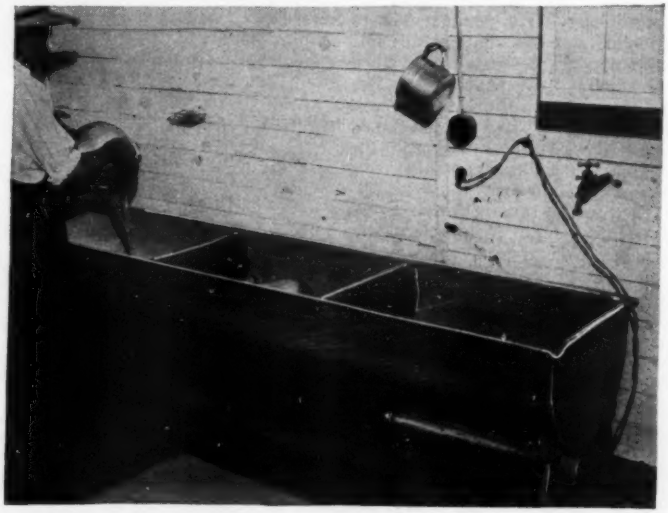
Lower: Floor plan of the four-cow milking barn.

Left: Interior of small barn showing stanchions and manger. **Right:** Four-can milk cooler which is part of the milk room equipment.

up in their buildings and equipment as they had in their cows. Mr. Coble reasoned that if he could keep the ratio of equipment costs so low, something could be worked out so that the small producer could have a similar favorable ratio. He took his problem to Mr. John A. Arey, our Extension Dairyman, and the writer. After conferences with State Board of Health officials, the Department of Agricultural Engineering developed a plan for a simple barn. The plan purposely was kept free of complex drawings and figures. The essential elements were included on one sheet and the very simplicity of the drawing and the design has made it attractive to the prospective builder.

The plan is for a four-cow milking barn with a milk room attached. The plan shows construction details for making this barn in sections, and prefabricated. Some have been built in this manner and others constructed in place on the farm. Substitution of cinder blocks or building tile for frame has been tried satisfactorily. The whole idea was to incorporate in the simplest possible way the essential details for the production of grade-A milk. Many barns have been constructed from this plan with slight elaborations, such as the addition of a feed alley. Others have had two or more additional stalls provided, but in North Carolina and the neighboring states, where over 200 of these barns have been constructed, the basic idea of simplicity remains.

The farmers who have built these barns store their feed in other structures. This barn is simply to take the place of the present milking space to enable the dairyman to produce grade-A milk. In our state there is a distinct movement toward lounging barns with hay overhead, with a separate milking barn where the cows are kept only at milking time. They are usually fed hay in the manger, but no hay while



Washing vat with electric water heater under the section at the right end. This is a commercially made washing tub, costing about $75. (Note: Where electric heaters or other electric equipment is used in a milk house where equipment and operator's hands are wet, we recommend *against* the use of an extension cord and plug as shown. Handling the cord and dragging it over the edge of the wash tub is definitely dangerous. Have the heater permanently wired with a switch to turn it on and off.—Editor.)

being milked.

Rural electrification in North Carolina has gone ahead at an astounding rate. Rising from the twenty-fifth state to the eleventh in the Union in number of farms electrified, we find the entire state covered by a network of lines. It was reasonable, therefore, to incorporate into this plan the use of some appliances for which electricity is essential. It was decided to make standard plans call for an electric milk cooler and an eletrically heated washing sink. In Mr. Coble's case, the cost of constructing these barns complete with a four-can cooler and a three-compartment sink with concrete floor and foundation has been less than $700. In many cases, Mr. Coble has financed the construction of these barns on farms whose output he takes, in such a manner that the barn will be paid for in less than three years by the increased price Mr. Coble is able to pay for grade-A milk, as compared to the same milk formerly produced without the use of this barn. This has appealed to many farmers, as Mr. Coble has done the financing with no initial investment on the part of the producer. A number of other processors are studying Mr. Coble's system of financing and undoubtedly many barns of this type will be constructed as the idea spreads. There have been over 400 requests for plans for this barn from every state in the Union except two, which demonstrates that a definite answer to a real need is always welcomed. One outstanding agricultural authority has stated that this is a splendid example of "stream-lining agricultural production to meet wartime demands." Wherever one of these barns has been constructed, the producer has benefited, the processor is happy, the State Board of Health is satisfied, but best of all *the soldier get his milk.*

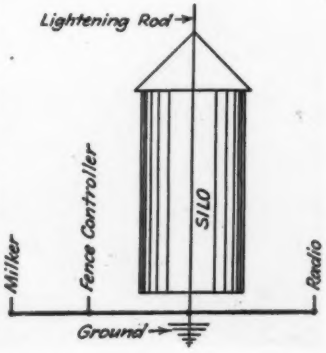
Good Wiring is Safe

Article 4. "Hot Wires" Caused by Short in Radio. Nine Persons Killed in Two Months by Homemade Electric Fences. Wireman's "Slip" Kills Five Cows.

LIGHTNING rods are good safeguards *if properly installed and connected to a first class low-resistance ground.* The rod does not attract lightning but it drains off the static charge of electricity which builds up in the atmosphere, and conducts it to ground without damage. The rods need to be installed by men who know their business.

On a farm in the Middle West, a lightning rod had been installed on a silo. The lightning rod, the radio, the milking machine and the electric fencer were all attached to the same ground. Some time after the installation was made, all metal pipes and stanchions in the barn became "hot," that is, they produced a distinct shock whenever they were touched. An electrician was called and disconnected different pieces of equipment one at a time. As soon as the radio plug was pulled, the shock in the barn was gone. When the electrician told the farmer that a short in the radio was producing the shock, the farmer thought him crazy. It was only after they had taken the radio to town and had it tested by a reputable radio repairman that the farmer would believe the radio was the source of the trouble.

What undoubtedly happened in this case was that a surge of lightning flowing down the lightning rod to ground, branched out and damaged the condenser or wiring inside the radio.



It is not always possible to avoid lightning damage, in spite of any provisions made for it. Multiple grounding at the radio, the silo, the milker, etc., might have helped; or a better ground with less electrical resistance might have disposed of the charge without damage. No stock was killed, but it might have been, as a shock which is just uncomfortable to a man may kill a cow.

Home Made Electric Fences Bad

"Contact with a section of wire fence which he had charged a short time before by connecting it with an electric service line cost the life of ....., a member of the Pennsylvania Adams Co-operative.

"Members of his family reported that he had previously had current passing through the fence circling the pasture from a set of batteries. This evidently did not work satisfactorily, and it is said he then connected the fence directly with the 110-volt line. In attempting to cross the fence he came in contact with the charged wire."

This death occurred in August, 1942. Between June 7 and August 2, 1942, at least nine persons were killed by homemade electric fences. Any homemade electric fence is a bad investment. It is not worth the risk to life and property. It is hazardous because the fence wire is purposely exposed to the touch of man and animals. The design of a safe fence controller involves more than appears on the surface. If an electrically charged fence is not worth the cost of an approved controller to you, you had better stay with the old style fence and keep electricity away from it.

Indiana Co-op. Superintendent Uncovers Bad Wiring

"Here is an incident that happened at a farm served by our lines about four years ago. The house had been wired at the time electric service was installed. No other buildings were wired at that time, but a 3-way switch was wired in the house to control a yard light at the barn at some future time.

"Later on, the dairy company to which this farm sold its milk, ... (More on page 28)

Spray Rigs for Fire Fighting

How High Pressure Fog Kills Fire—Fight Fire with Small Quantities of Water—Possibilities of Spray Rigs—Their Shortcomings—What to Do About It

By **GEO. W. KABLE**

FOG—that high pressure mist that thousands of farmers apply to their fruit trees and potatoes—is commencing to be recognized as one of the most effective agents in putting out fires. This should be good news to farmers and to insurance companies. It can be good news with a kick-back if the presence of a spray rig on a farm gives a false sense of security, merely by its presence. To be effective it must be ready always for instant use.

About 200 farm buildings in the United States and Canada burn every day. The annual money loss is around $100,000,000, about one-third of the total national fire loss. Thirty-five hundred people are burned to death every year in rural communities. The wisest and safest thing to do is to take precautions and use care to prevent fires. For the fires that do occur, a consideration of the spray rig for fire fighting deserves attention.

A fire is started whenever a combustible material in the presence of oxygen reaches the kindling temperature. It will continue to burn as long as there is oxygen and the temperature remains above the kindling point. It will go out if you can smother it or reduce the temperature below the burning point.

High pressure fog is effective in putting out fires because it cools the fire quickly and blankets it with steam. The fog used for fire fighting is most effective at about 600 pounds pressure at the nozzle or at the higher spray rig pressures. The water particles in such a fog are very fine, and every particle has a chance to come into contact with the fire. What then happens is that each little particle is changed into steam and in making this change it takes up enormous quantities of heat—enough to cool the fire so it will go out.

Upper: This old building at Pennsylvania State College was fired with old engine oil and old paraffined paper cups until it was well ablaze. Eighteen seconds after starting to use the orchard spray gun on it, the fire was out. **Lower:** Oil fire extinguished with the fog from an orchard spray gun. The cloud that is rising above the building is steam. Photos courtesy Geo. F. Johnson.

Other Advantages of Fog

There are other distinct advantages in fighting fire with fog nozzles. The high pressure pushes the fire and smoke ahead of it so a man can walk up close to a fire to fight it. Because of the cooling effect of the small particles, it is claimed that only 1/35 to 1/10 as much water is necessary as is needed with a low pressure stream of water. This means that there is much less water damage to furniture and furnishings. The fog also gets the blaze under control quickly, with the result that fires may be put out with only a fraction of the amount of water that would be needed by a bucket brigade or through a hose at ordinary pressure. The very high pressure of the nozzle also has some effect in blowing out the fire.

In a report of the Michigan Agricultural Experiment Station it is stated that "demonstration fires have been brought under control or to smouldering embers in from 30 to 60 seconds by using only 20 to 30 gallons of water."

Fog has been effective on most types of fires, even gasoline fires. By using a nozzle which can be adjusted to deliver a high pressure solid stream or a fog, the fire may be blown ahead with pressure and then cooled and smothered with fog. So effective has this been, that some spray rig factories are now devoted almost completely to the building of crash trucks for air fields. Many fire departments are also acquiring high pressure equipment.

In the hands of a trained fireman, or even when pointed by an orchardist, a high pressure fog gun is an effective piece of fire fighting equipment, *IF it has pressure behind it* and is ready when the fire occurs. Therein depends whether farm spray rigs are or are not good fire fighting equipment.

Fog at 600 pounds pressure at the nozzles being used by city firemen. A blaze like this which may be difficult for solid, low-pressure streams, yields quickly to high pressure fog and with very little water damage to house furnishings. Most of the water turns into steam, showing that it has absorbed the maximum amount of heat.

Electrically operated stationary spray rigs which are usually located in the farm buildings, should furnish excellent fire protection. Portable spray outfits can furnish good fire protection if they are so placed and equipped that they can be quickly put to use when a fire occurs.

It is customary to thoroughly clean and drain the spray pump, tank and hose lines when the spraying season is ended. If the spray equipment is to serve as a fire fighting unit, it must be kept full of water or be so placed that it can be instantly filled from barrels or tank. The pump must be oiled and in good working condition, and the power to drive it must be tuned-up ready to start quickly.

If the pump is driven by an electric motor as regular equipment, or is equipped with a motor for standby fire service, it will be ready to start quickly. The wiring should be located so as to be least susceptible to injury in case of fire. If a gas engine is to be depended on for power, it should be kept in good running condition and started once every month or oftener for a test run. If the rig is of the type that is driven from the power take-off of the tractor, then the tractor should be housed with the rig and be hooked up in readiness to run.

In freezing climates there is the problem of having water quickly available when needed. There are two solutions for this. The best one is to keep the filled tank in a warmed building. The other is to have barrels of water containing calcium chloride to keep it from freezing, ready to dump quickly into the tank. This is not so good, as the calcium chloride tends to rust the tank and pump, nor is it desirable to use on upholstered furniture, radios, metals, etc., when fighting fire. If you do not have a warm building at home, consider the possibility of placing your spray rig in the nearest fire hall or on some neighbor's farm. If used for fire protection, it will be more in demand in the winter than in the summer.

Sprayers mounted on iron wheels without springs are not made to be moved rapidly over rough roads. Fifteen miles per hour is probably the limit without shaking them to pieces. This must be borne in mind. The boom on potato sprayers should be removed at the end of the season and a hose connection provided.

To Be Safe—Be Ready

Farmers who wish to use their sprayers for fire protection should try them out on brush or other fires to get the "feel" of operating them and applying the fog in the best manner.

The spray rig is potentially an excellent piece of fire fighting equipment — better than some towns have. The difficulties of having it always in readiness for use so it will give you actual and not just potential protection are real and call for some effort and advance preparation. The difficulties of replacement of burned stock, feed, buildings and people is even more real these days, and warrants the necessary effort. Just don't be caught thinking you have protection when your spray rig is not ready to produce the fog that puts out the fire.

Even if you have a spray rig, you had better keep the garden hose close to a hose-bib on your water system. A *small fire* is easy to extinguish, and a handy hose may do it in less time than it takes to start the spray pump.

If you count on your sprayer for fire protection, be sure

1. That it will be ready when needed.
2. That there will be someone available to operate it.
3. That you have other protection if either of these fail.

Further information on spray rigs or high pressure water in fire control may be obtained from Michigan Agricultural Experiment Station, East Lansing, Mich., and the John Bean Mfg. Co., Lansing, Mich.

It's the little things that make the difference

A kind word and a smile helps make you a good neighbor.

•

A penny behind the fuse may burn the house down.

•

That little thermostat in the electric iron holds the temperature and makes it unnecessary to turn the iron on and off.

"Shorty" Boggs on Brooding

Washington Poultry Authority Tells of Some of His Practices in Producing Good Healthy Pullets

By E. C. SCHUH

FOR the past sixteen years Mr. L. C. Boggs, or "Shorty" as he is known to poultrymen here in Washington, has been managing the Washington Cooperative Chick Association's poultry breeding farm just north of Bellingham as well as the newer turkey breeding farm near Marysville. Every year "Shorty" supervises the brooding of some 16,000 chicks,—and to brood this many chicks year in and year out with a mortality of only three to four percent really requires some careful management.

You Must Start With Good Stock

To my inquiry of what he considered the first important consideration in a successful brooding operation Shorty replied, "Well, if you want to raise good pullets you've got to start out with chicks that come from good stock. It just doesn't pay to buy low quality chicks simply because they may be a cent or two cheaper in first cost. When selecting chicks it is important to get them from stock that is good not only from a production standpoint, but the health and length of life of the parent stock should also be considered."

Whether you are using a permanent brooder house or a portable one it's extremely important to use buildings that are located as far as possible from the old hens. A recent experiment at the Western Washington Experiment Station demonstrated the necessity for poultrymen to begin brooding chicks away from old birds to aid in controlling leucosis.

The chicks that were started near the old birds had a leucosis mortality of 27.4% during a 68 week period. Those that were brought in when they were two, four and six weeks old had a leucosis mortality of 22%; those at eight weeks 20%; 12 weeks 17%; and those that were kept away from the old birds until they were sixteen weeks old had a leucosis mortality of only 11.4%.

Keep Out Disease

Care should also be used to see that disease is not tracked to the brooder house by walking from the laying house directly into the brooder house. Now there are several ways to guard against this such as wearing rubbers, using disinfected door mats, etc. But, as Shorty Boggs pointed out, perhaps the simplest way is to split up the work between husband and wife. I know from actual observation that on many successful poultry farms the poultryman's wife takes over the brooding of the chicks while her husband concentrates on care of the layers.

After you have arranged to isolate your brooding operations from the laying flock Shorty says the next important thing is to "have the brooder house clean, disinfected and *dry*. There is no substitute for cleanliness in the poultry business and it is especially important during the first few weeks of those chicks' lives.

Scrub and Disinfect Woodwork

At our farm we thoroughly scrub all of the floors and other woodwork that the chicks come in contact with and then when they are dry we spray the entire house with a good coal tar disinfectant. These things should be done far enough in advance so that the brooder house will have time to get perfectly dry before the chicks arrive.

"After scrubbing and disinfecting the brooder house the next important thing is to get the brooding equipment set up and in place. We allow about 1" of hopper space per chick and use about six star founts for each 500 chicks. Incidentally, we brood in lots of 500 chicks each and find that we really do get better results when we hold the number of chicks per brooder down to 500. Another thing we do is to have our brooders set up and operating at least three days before the chicks arrive. This gives us a good chance to get the thermostats regulated and check on all the parts to see that they are in good working order."

Day-Old or Started Chicks?

One thing a lot of poultrymen wonder about is whether it is better to brood day-old chicks or to buy started chicks. So I asked Shorty about this and here is what he says, "We like to put day-old chicks under the hovers on our farm, and I believe that the average poultryman can do better by following the same practice. Our experience has been that it is easier to get the day-old birds started to eat and drink when put under the hover. Battery-started chicks seem to develop habits of eating and drinking that are hard to change when they are put under a floor brooder."

Here's something that will be

"When they found out the war means no electric trains this Christmas they all wanted to get a crack at Hitler."

Earn War Stamps for ELECTRICAL EQUIPMENT SUGGESTIONS

Our equipment suggestion forum continues until February 1. The subjects are:

1. What new electrical device, equipment or process would help you in your farm production program?

2. What is wrong with equipment that has been available that has kept farmers from using it?

Send your suggestions in answer to either or both of these questions to ELECTRICITY ON THE FARM, 24 W. 40th St., New York 18, N. Y. Mark SUGGESTION at the top of each sheet. Send as many suggestions as you have ideas. We will pay $1 in War Stamps for each suggestion which we think has merit, and will give a $25 War Bond for the best suggestion (in our opinion) received before February 1st. This is NOT A CONTEST. It is an effort to get constructive comment which will make electricity more helpful to you after the war. Suggestions are welcome from everyone.

of interest to poultrymen planning to brood New Hampshires, R. I. Reds or other heavy breed chicks. Shorty says, "We have found that they should be fed chick-size grain from the first day. Of course, it only takes a small amount, but unless they get this grain they seem to 'paste-up'." Too much grain will reduce the chick's protein and vitamin intake and slow up growth.

This is one year we want to put birds under our hovers that will go into the laying house as good healthy pullets next fall. One of the most important things we can do to accomplish this is to give those birds a good start when they are young.

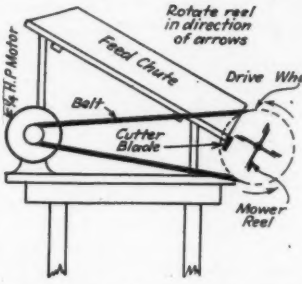
Ammonium nitrate is a satisfactory nitrogen *fertilizer* if granulated and the granules given a new coating treatment to prevent moisture absorption; the coating is a film made up of a wax-like material and a fine clay.

Green Feed Chopper Made from Lawn Mower

By **PAUL F. SWANSON**

A BROKEN lawn mower, a spare motor, plus an 8-inch pulley and a 72-inch V belt, made this serviceable grass chopper.

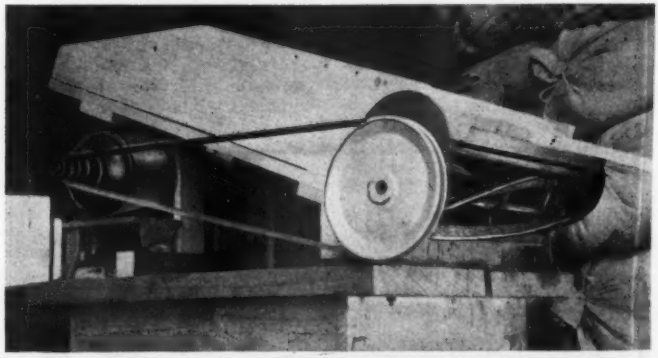
The idea came from a poultryman, Mr. Omer Lavoie of E. Chelmsford, Mass., who has been using one for two years.

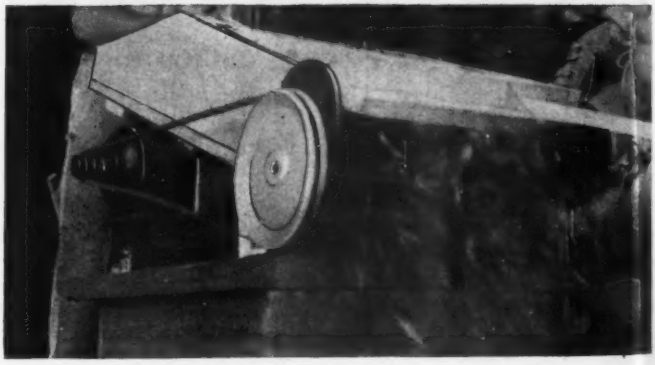


We use our cutter daily to cut about 200 lbs. of young oats, second crop hay, Ladino clover or whatever is fresh and tender on the farm.

The chopped green stuff is fed to confined layers and growing stock on a wooded range where there is no grass. It adds cheap protein, mineral and vitamins to our wartime mashes. It also helps to prevent cannibalism and blue comb (pullets disease) in newly housed pullets as it breaks the shock of the change from range life to the confinement of the laying house. It will also save feed and increase the hatchability of the eggs produced.

To build the cutter, remove drive wheels, roller and handle from the lawn mower. Fasten it to the bench by means of angle irons and bolts placing the cutter blade to the rear against the feed table. Fasten the pulley directly





to the shaft of the mower reel using a size to give a speed of about 400 R.P.M. If the motor is 1750 R.P.M. with a 2-inch drive pulley, 8 inches will be about the right diameter for the reel pulley.

Make a feed chute the width of the mower reel and set at 90° angle to the cutter blade so grass will be cut off squarely and not pass through. See diagram.

Feed slowly to cut grass in short lengths. A large bag can be attached under the reel to catch the clippings. *Warning:* Cover the chute well up and push grass in with a board so that fingers will not be caught. Oil frequently.

Mr. Lavoie also uses his cutter in the winter time for chopping alfalfa. After chopping, he steams it by pouring on hot water and covering with a blanket.

Lemley Farm Production Goes Up

Electricity Gives Time for Better Planning and Herd Care—Mrs. Lemley Helps

By **HOWARD CLAPPER**

ELECTRICITY came to the Walter Lemley farm in Perry Township in May, 1938, and with its coming came also a regular "revolution"—a peaceful revolution which saw back-breaking old-fashioned hand methods pushed into the background as the new "wired hand" muscled in and took over.

With an adequate wiring system installed, electric light became available in the remotest corner of the barn, house, and all the outbuildings. An electric motor on the pump in the milk house pumped water for the herd of pure-bred Guernseys, besides circulating cold water through a home-made insulated tank milk cooler that does a satisfactory job of cooling milk at a minimum cost. Walter says that this pump is his biggest labor saver and that for two cents per day he now does the work that formerly took one and one-half hours of hand labor every day. Electric light replaced kerosene lanterns for all-night light in the poultry house; a portable motor showed up on the corn sheller, and on the fanning mill, and a radio found its way into the milking parlor.

In the house an electric refrigerator replaced the old ice box and cut refrigerating costs in half; an electric range took over the cooking job; a dishwasher (any housewife's best friend) saves Mrs. Lemley countless hours of drudgery; and an automatic electric water heater in the basement supplies an abundance of hot water for the entire family.

Upper: Now why was that can returned? Lower: An electric water system and electric water heater now helps with sanitation and with cooling the milk.

Now this sounds like a lot of conveniences, maybe even bordering on luxuries, which ordinary farm folks have long been denied, and some folks say, aren't supposed to have. But the Lemleys keep Farm Accounts and Dairy Herd Improvement Records and they can lay before you some interesting and convincing figures on why they should have them.

In the year ending February 28, 1937 B.E. (before electricity) their Guernsey herd produced 7,283 lbs. of milk and 348.4 lbs. of butterfat per cow. For the year ending February 28, 1943 their herd production had jumped to 9,834 lbs. of milk and 459.2 lbs. of butterfat per cow.

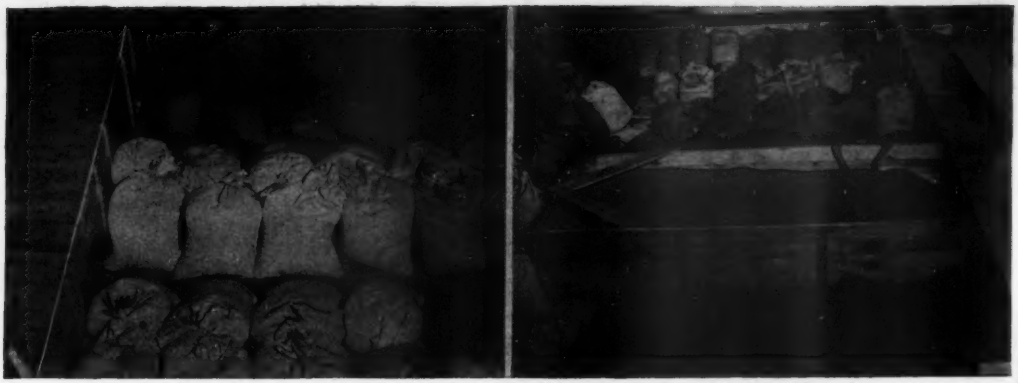
Increase Came With Electricity

How much of this splendid increase that can be credited to the electrification of the farm cannot be accurately measured. It is interesting to note, however, that for the years prior to 1937, herd improvement was at a standstill. In fact some decline was noted as production way back in 1929 was 7,615 lbs. of milk and 381.8 lbs. of butterfat per cow.

The upturn in herd production came hand in hand with the advent of electricity on the Lemley farm and we've a hunch that the labor saving features, the conveniences, the luxuries if you please, by allowing more time for planning, handling, feeding, and caring for the herd, contributed largely toward this increased production.

The Lemleys milk an average of eight cows and their 96 acre farm is manpowered by Mr. and Mrs. Lemley and one daughter, Mary. In 1937 the labor situation was handled by Mr. and Mrs. Lemley and one son Dean who is now serving with the armed forces and whose place is being filled ably by the daughter.

The "revolution" on the Lemley farm has been a happy and prosperous one and if anyone wants to know if electric service really saves labor, and increases food production on a farm, we'll send 'em out to the "Mardea" farm, R.F.D. #3, Fredericktown, Ohio.



Right: At the right is the main air duct of the drier. A lateral duct runs through the center of the bin of loose grain, and the grain in sacks is stacked against other laterals. **Left:** This shows how the grain—barley, oats and wheat—was placed against the hay drier laterals in cotton and burlap bags. Air at outside temperature is blown through the duct system. It comes out of these short laterals through openings on both sides next to the floor.

Mow Hay Finisher Used For Drying Grain

By **PROF. DAVID S. WEAVER,**
North Carolina State College,
Raleigh, N. C.

I HAVE noticed some items in ELECTRICITY ON THE FARM on different methods of drying combined or damp grain and think your readers might be interested in our experience in drying grain in the mow hay drier installed at the Experiment Station.

The accompanying pictures show the use of our hay drier in drying grain in both sacks and in a bin. We were all skeptical as to the ability to dry grain satisfactorily in sacks. We hoped that it would work as the labor would be greatly reduced. As far as we could tell in a rather hastily conceived test, there was no difference in the drying results in the sacks and in the bin. In one of the pictures you will note that we used some cotton sacks and some burlap bags for the grain. As far as we could tell, there was no difference in the drying in either type.

The necessity for using this drier for grain arose very suddenly and we did not have time to work out and plan a real experiment. It was simply a test, but everyone was very well satisfied with the practical results. We dried barley, oats and wheat this way. Next year we plan to conduct some research on this subject which will be much more conclusive and definite than our simple test this fall.

FARMERS! Do You Want $5 Billion? You May Have It

In 1941, according to the National Safety Council, there were 18,500 fatal accidents among farm people, 4,500 of them occupational in nature. In 1942 the record was slightly better, i.e., 18,000 fatal accidents among farm residents, of which 4,400 happened at work. The commonest causes of such farm occupational accidents are, by far, machinery, falls, and livestock. In 1942 agriculture as an occupation provided 24 per cent of all occupational accident deaths. This made it a more hazardous calling than building construction, trade and service occupations, manufacuring, transportation, public utility work, mining, quarrying and working around oil and gas wells.

As a whole, there were, in 1942, 93,000 accidental deaths and 9,200,000 non-fatal injuries in the United States. *The total cost was* $5,200,000,000. For comparison: The War and Navy Departments in July 1943 made public their casualty lists for the first 1½ years of this war. At that time 16,566 members of the armed forces had died in action or from wounds as compared with 53,407 in the 1½ years 1917-18.

Hence more farm residents died by accident in 1942 alone than were killed in the armed forces in a period half as long again. That is no record to boast about. More care on farms would help.—USDA.

Most accidents are caused by carelessness and thoughtlessness. If you want your share of that $5 billion, think—and be careful.

More Skin—More Spud

"Spare the peel and save the spud" is advice from nutritionists. When you peel a potato, you throw away one-tenth to one-fourth of its bulk, and lose some of the potatoes' minerals and vitamins. USDA.

Number one use for *beeswax* before the war was in cosmetics—lipsticks, cold creams, rouge and deodorants; now its number one use is for waterproofing and protective coatings for shells, belts, coils and machinery.

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Christmas Gifts of Food

It isn't likely that many of us can make hundreds of Christmas cookies or pounds and pounds of candy this year. But even if we can't, this is likely to be the biggest food giving Christmas we've ever had. Rightly so. Giving foods we have raised or prepared to friends who could have no garden, fits in with war-time needs.

The thank-you note that comes back from such a gift will say "just what I wanted" and mean it from the depths of somebody's heart.

Of course the giving must be wisely done. It cannot evade rationing rules, for that would encourage black marketing right in the midst of our loving holiday exchanges. That means that this year's Christmas basket may not contain a jar of freshly churned butter nor yet a roast or half a dozen chops from a freshly slaughtered hog. These rationed items may not be given as gifts. But it can contain jars of canned goods; regulations allow these as gifts up to 50 quarts a person, a liberal allowance few of us are going to approach in our holiday giving. And it can contain pickles and jams and jellies if you had the sugar to make them, because pickles and jam and jelly are not rationed.

These are easy to give even if you didn't have gifts in mind when you were doing your canning. A square of red tissue paper, with a square of white over it tied tight over the top of the jar with the ends fluting out like petals makes the jar look very nice under the Christmas tree.

If you are a good bread baker, a loaf of your fresh home-made bread is a toothsome gift many families would welcome. Cakes are another, and a batch of simple wholesome cookies would make some mother sigh with joy.

Stored vegetables, cleaned and packed in neat containers are a real gift to homes that have no gardens. And in these days that means any vegetable you can spare, from cabbage to squash, with pumpkins, carrots, and onions leading favorites.

A chicken or a duck is an extra special gift, welcome for itself and for the ration points it saves.

If there are nut trees on your farm, you can make the nut crop help supply your gifts. Nuts as they are or meats picked out carefully from the cracked nuts are highly satisfactory gifts. Pop corn, too, is welcome to families with or without children.

This kind of giving is doubly important this year when food has turned weapon of war. You say "Merry Christmas"—and pass the ammunition!

Simple Christmas Cookies

Soft Molasses Cookies

Good for Cut Outs

1 cup molasses
1¾ tsp. soda
1 cup sour milk
Flour
1½ tsp. ginger
1 tsp. salt
Grated rind of two oranges
½ cup melted shortening

Beat soda into the molasses and add milk, shortening, ginger, orange rind, salt and flour. Use enough flour to make a dough that will drop easily from a spoon. Chill several hours. Roll thin on a floured canvas or board. Bake on a greased cookie sheet in a 350 degree oven.

Chinese Chewy Cookies

If you can get them

1 cup chopped dates
1 cup chopped nuts
1 cup sugar
1 tsp. baking powder
2 eggs
¼ tsp. salt
¾ cup flour

Mix all the ingredients and bake in a shallow pan for about 15 minutes in a 350 degree oven. Let cool slightly. Scoop the confection out with teaspoon and shape it in small balls. Roll each in granulated sugar.

Spice Cookies

1 cup brown sugar
½ cup white sugar
1 cup shortening
2 eggs
½ cup sweet milk
2 tsp. baking powder
3 cups flour
1 tsp. each cinnamon, cloves, nutmeg
½ cup peanuts

Cream shortening and sugar, add eggs, then flour and milk alternately. Sift the spices and baking powder with the flour before you add it to the mixture. The peanuts go in last.

Helen's Oatmeal Cookies are crisp, and rich and good. She bakes them in a wide flat pan that has a turned-up edge that stops the batter's spreading.

½ cup butter (or part shortening and enough butter to get the flavor)
½ cup of brown sugar
2 cups of oatmeal
Pinch of salt

Helen creams the butter and sugar, then adds the oatmeal and salt, and packs the mixture into the pan. She bakes the sheet of cookies at 375 degrees and takes them out before they are really brown, cutting them into strips at once. They become quite crisp as they cool.

"Meat" from Yeast

This is a generation that seems likely to find itself incapable of further surprise. We have seen sheer, filmy stockings produced from coal and air and water, and steering wheels from soy beans. We are in a mood to expect miracles. But up to now—I believe I'm right—the things we eat have reached us pretty much in familiar form.

If we wanted eggs, we got eggs—hen, turkey, or guinea, perhaps, but recognizably eggs. That won't be true after the war, but it is for most of us now. Bread might take on a different color as we shift to the use of whole grain flours, but a loaf will come out of the oven, fragant and crusty, the same as ever.

Synthetic "Somethings"

Now there is in prospect for us a food as yet unnamed, a food made from yeast, molasses, ammonia, water and air, a food that can have the flavor of meat, of nuts, of celery, as you like; a food that will be richer in protein and vitamins than meat, that will cost far less to produce, and can be made—in fact is being made at the rate of a ton in twelve hours.

Three years ago an English chemist experimenting with yeast as a food to supplement poor diets, developed a strain with a pleasant nutty flavor, very satisfactory for his needs.

The idea of making this yeast into a staple food for the dinner tables of the world came to a young American geneticist, Carl Lindegren. He and his wife started painstaking cross breeding of yeast cells to get strains of different flavors to satisfy various food tastes. He has been so successful that one of the large brewing companies of the country is already turning out this new food by the ton, a fine light brown powder that can be made into soups, meat loaf, muffins, or cheese sticks.

Obviously the future of this new food staggers the imagination. It is limited only by the research of the producers and by the ingenuity of the cooks who turn it into dishes for the table.

Evidently we will have to wait till peace comes to taste it for ourselves. It is being bought for

You CAN'T Make POULTRY PROFITS This Way!

Hens lay 10 to 40% more eggs when they get *all* the clean water they will drink. To take care of their requirements, plus all your other farm watering needs, calls for plenty of water from outlets at convenient points. You can't get this kind of water service from a "teaspoon capacity" water system.

Plan to own a famous big capacity Myers Water System and enjoy all the labor-saving, profit-making advantages it offers you. It pays in many ways to own a Myers!

Myers Water Systems are available in increasing numbers for farm use. See your Myers dealer for new equipment—or for repairs, replacements or additional pipe lines.

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Pattern 673 . . . Embroider framed initials. Two alphabets, three pairs of flowered frames. Pattern contains full details. 11c.

Pattern 9516 . . . Princess paneled slip. Embroidery transfer included. Sizes 14 to 20, 32 to 42. Size 16 requires 2 yards 39-inch fabric. 16c.

Pattern 4497 . . . This attractive apron is a good cover-upper. Sizes small, medium and large. Small size requires 1¾ yards 35-inch fabric. 16c.

Send orders with coins enclosed to ELECTRICITY ON THE FARM, 196 Pattern Dept., 243 W. 17th Street, New York 11, N. Y. Allow plenty of time.

the Army and lend Lease distribution. There is none for civilians as yet. We may get used to turning a handful of brown powder into the Sunday roast; but if you really like meat you will probably still have to tend the calves and grow it in the pasture.

New Fall and Winter Pattern Books

Here is a practical pattern book, its colorful pages sparkling with new styles. More than ever before it is designed to save you money. There are clever suggestions for using salvaged fabrics, and for remodeling or remaking that old dress so that it may hold its own with the newest of this year's styles. Most interesting of all, there's a ready-to-use free pattern of an apron and applique' printed right in the book. This Pattern Book is only ten cents.

Fifteen cents more brings you our New 32-page Needlecraft Catalogue containing 133 illustrations of beautiful designs for embroidered linens, knitting, crochet, quilts, home decoration and toys.

Send orders with coins to same address as for patterns.

DECEMBER LETTER CONTEST

Have you an automatic washing machine in your home? If you have, how do you like it? Does it save your time and effort in getting the washing done? Does it get the clothes clean?

From the letters that answer these questions most thoroughly and clearly, we will choose one to publish in ELECTRICITY ON THE FARM. To the writer of the letter we publish we will send $5 in War Stamps.

Address your letters to Gail Meredith, 700 S. Mills Street, Madison, Wisconsin.

Send them in by January 1st, 1944.

Stay Friendly with Your Refrigerator

It does not take very much electricity for a refrigerator in good mechanical condition. If a day comes when the motor runs oftener than usual, it would be wise to check up on the box and on the habits you've formed in using it. You want all the electricity you need to keep a safe temperature, say 40 degrees inside the cabinet, but not one kilowatt more. That's just common sense.

If the motor is running too much, are you sure you are careful about keeping the door shut?

There are women, perhaps you have seen them, who stand with the refrigerator door open and plan the day's meals. If you know what is inside, decide what you are going to take out before you open the door. When putting things away, have all the food ready to put in before you open the door, and close it quickly once it is inside. Work fast.

Leaving the door open lets warm air into the box, increases the formation of frost, and makes the motor run more.

Do you over-crowd the box?

Keep out of the cabinet any foods that do not need refrigeration. Be careful not to have dishes packed tightly against each other or the walls. Take paper wrappings off foods you bring from town. Paper is good insulation and hinders the cooling of the food. Besides, why should you buy current to chill paper anyway? Or the tops of carrots or any inedible portions of food you are putting away? Put tinned foods into the refrigerator only for chilling. Avoid putting in hot food or hot dishes.

Do you defrost regularly?

Letting a heavy layer of frost pile up on the chilling unit puts an extra load on the motor and compressor. They must work longer to keep the box at the usual temperature. Defrost when the layer of frost is a quarter of an inch thick.

Does air leak into the box around the door?

You can tell by the well known dollar trick. Close the door on a dollar bill. If you can pull it out easily, the door doesn't fit tight enough. Perhaps the latch needs adjusting. Perhaps the rubber gasket around the door is loose or dried out. It will pay you to replace it if you need a new one.

Is the refrigerator properly located for economical use?

It should not stand close to a coal or wood range, and it should stand well away from the walls or cabinets. Make sure there is twelve inches between the top of the refrigerator and any shelf or cabinet above it, and four inches between it and a wall at the back or sides.

When did you clean the condenser last?

If the condenser is dirty, that will make the motor run more than it should. Clean a fin-condenser once or twice a year with a long handled brush or with one of the vacuum cleaner attachments that can get at the fins. Pull the cord from the convenience outlet to disconnect the refrigerator before you start the cleaning.

Methods with Mixers

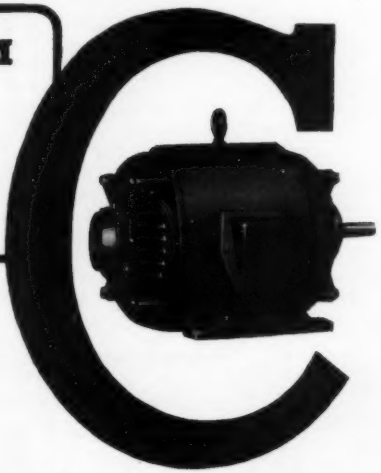
PERHAPS you have found different ways to make your electric mixer and its attachments save your time and strength, but other women use theirs to

Cream shortening and sugar
Beat eggs
Whip cream
Churn small amounts of butter
Mash vegetables
Mix batters and doughs
Chop meat
Slice vegetables
Extract juice from fruit
Make salad dressings
Mix malteds
Beat up gelatin desserts
Beat fudge and other candies
Mix sandwich spreads
Cut shortening into pastry flour

If you have a rubber spatula, use it to scrape the batter from the sides of the bowl and to push the dough down from the beaters.

YOU CAN GET HELP FROM A CENTURY MOTOR

TO MEET THE DEMAND FOR MORE FOOD PRODUCTION WHERE YOU ARE SHORT OF MAN-POWER



Century Motors will work for you 24 hours per day.

Century Repulsion Start Induction Motors are especially adapted to all 'round farm use. They have high torque to start tough loads, yet their low starting current produces least light flicker.

Century Type RS Motors are helping hundreds of farmers to produce more food, doing many heavy farm chores formerly requiring manual labor. For complete information, see your equipment dealer or write direct today.

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One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World

A metal spatula isn't so good for this, because it may nick the edge of the beaters.

Use the recommended speed for each different task.

See that the bowl is adjusted to let the beaters just clear the bottom.

Wash beaters thoroughly after each use.

Explore the spindle shafts to see if they have any batter clinging to the sides. Get it out.

Try to keep the flour out of the air vents. You can do this best by adding the flour slowly, at the outer edge of the bowl.

Do not put the circular disc in water. Wipe it and the motor casing and standard with a damp cloth.

Do not try to clean attachments, such as the meat grinder without taking them apart. Don't try to pull out pieces of gristle or bone that stick going through. If the drain of the juice bowl gets clogged with pulp, rinse it through with running water.

If the motor is noisy, or if it overheats easily, it may need oil. Oil it sparingly. If you have the directions for your mixer, follow them carefully in oiling it. If you haven't try dropping oil, just three drops, into the tiny holes in your motor from the end of a toothpick.

Many bowls are not heat resistant so be careful in handling them. They are not meant for oven use. They should be cared for like any other glass. Pouring boiling water into them is taking a chance of cracking them.

The Prime Mfg. Co.
Milwaukee • Wisconsin

Make sure *your* electric fence *can* do the job. And get the added assurance of Underwriters' approval for safety and Prime's ten-year record of leadership . . . *See your Prime dealer now.*

So Now My Dad

My Dad was figured quite a guy
'Cause he could plow so straight by eye.
Each field in turn was done just so
With not a kink in any row.
The fields were square against the hill
And when it rained each row became
A gouging, tearing little rill.
And now the soil that used to grow
The crops in fields so square and straight,
Is thin and scarred and getting so
It's only figured second rate.
Furrows straight and up and down
Do not fit a hill that's round.
So now my Dad, with equal pride,
Has many fields that side by side
Wind round the hill, a narrow band
With each row fitted to the land.
And now the rain that falls can stay
Instead of wash our soil away,
Between the rows where you can see
Is a better place for it to be,
For there it stands and soaks away
To feed the crops another day.
—Vic March.

From Livingston County (N.Y.) Farm & Home Bureau News.

Chickens Have Taste

Prof. E. L. Dakin, Head of the Poultry Department, Ohio State University, says that chickens have the sense of taste. When offered the various ingredients of mash in separate containers, they will not fill up on just one ingredient, but will try them all and eat the amount of each one that is needed for body maintenance eggs, etc. They know the difference—and what is good for them. When given their choice, the chickens also prefer coarse mash to finely ground mash, and what's more, they make better gains per pound of feed on it.

Bee Eats Its Weight in a Month

If bees have materials for making "bee bread"—honey, and pollen to mix with it—a normal colony can overwinter successfully even when exposed to severe weather. Bees need about six times their own body weight in food, just as humans do. A ten-pound colony of bees needs sixty pounds of honey and four or five combs of pollen stored in the hive to carry it over winter. USDA.

By JEROME J. HENRY

Slight Error

Frances Scott, who is master of ceremonies for "Let's Play Reporter," once had her troubles with a "shopping expert," who vowed she could "feel" her listeners.

John MacVane, NBC war reporter in turbulent Algiers, is shown broadcasting to the United States from the secret radio room in Allied headquarters in North Africa. MacVane was among the first to accompany the Allied Expeditionary Forces there in November, 1942.

"I just know I got my message across that time," said the woman one morning.

In walked the engineer. "If you did," he said, "I don't know how! We've been off the air for ten minutes."

Dinning Sisters Veterans In Name Only

Although they're veterans of the entertainment world, the Dinning Sisters are not yet grown up in the eyes of the law. The oldest, Lou, only reached voting age in September and the twins are a year and a half younger.

When Lou was sixteen they borrowed a jalopy from their brother and headed for the NBC studios in Chicago. Their audition was sensationally successful, which was fortunate, since their entire supply of cash at the time was fifty cents. Since then they've been heard on the "Breakfast Club," "Club Matinee," "Songs My Brother Taught Me," and the "National Barn Dance."

They can't read music but have an acute feeling for harmony. When they run over new songs with a pianist, they mark the score and their arranger then interprets it for orchestration.

Real names of the Oklahoma songbirds are Virginia, Louise and Eugenia.

How to Become a Radio Star—The Hard Way

Jane Kaye of the "National Barn Dance" became a radio soloist the hard way. The very hardest way.

Jane stood atop the steel framework of the unfinished administration building of the San Francisco exposition and sang her first solo into a microphone while an orchestra accompanied her from an airplane soaring directly above.

She'd been singing since her first piano recital at the age of 7, when she changed the program by giving a vocal rendition along with her piano piece. On graduation from high school, Jane started singing with groups on a Chicago station, and with Joe Sanders' orchestra. Then her "precarious perch" solo job at the exposition started her on the radio career.

The Old Days are Gone Forever

In the good old days, fathers used to urge their daughters to take up schoolteaching, so they'd have something to fall back on if they didn't land a man.

Times have changed. Most girls nowadays marry and go right on with their chosen profession, which may be anything from modelling to retreading worn tires.

In the case of Eileen Palmer,

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CLIPMASTER
Famous
Easy-Running
Animal
Clipper

Plenty of Blades and Repair Parts are Available Now

• The limited quantity of STEWART Clipmasters WPB has authorized us to produce will be available through dealers. Of course there will not be nearly enough to meet the demand, but you can keep your present Clipmaster in good working condition with repair parts and new blades now ready. Check it now. If you need blades or repair parts, see your dealer or write to us.

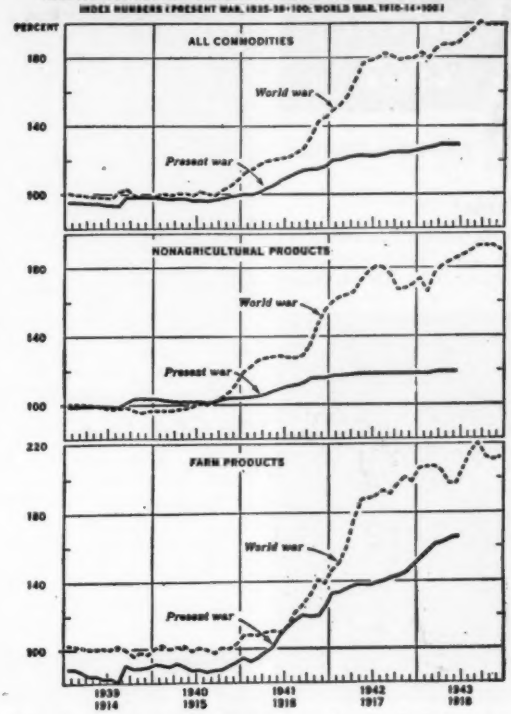
CHICAGO FLEXIBLE SHAFT COMPANY, DEPT 30
5600 West Roosevelt Rd., Chicago 50, Ill.

OVER HALF A CENTURY MAKING QUALITY PRODUCTS

Lovely Florence Williams seems to have made a habit of success. Added to her list of stage hits are several radio serial parts, chief among the lot the popular "Front Page Farrell." Florence made her debut in radio while she was playing with Judith Anderson in the Pulitzer Prize play "The Old Maid."

it's acting, and she has several spares if she ever tires of microphones and studios. Eileen was an expert stenographer and a registered laboratory technician before her first audition in her home town of Portland, Oregon. Though her voice was untrained, her simple direct manner of speaking won her a role and she has been one of radio's busiest actresses since. At present she is appearing in three daytime serials — "Lone Journey," "Lonely Women" and "Ma Perkins."

Eileen is married to Les Tremayne, NBC actor, who claims that if worse should come to worst, his wife's cooking is good enough to net her a tidy income.



From the Bureau of Agricultural Economics, U. S. Department of Agriculture.

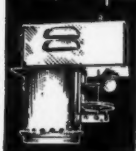
The above curves, while of interest, tell only part of the story. They do not include labor costs, the problems of feed and ceiling prices or handicapping regulations. On October 15, BAE reported prices being received by farmers at 116 per cent of parity with a decline of one point under the preceding month and an increase of one point to 166 in prices paid by farmers.

Dinner plates made of slabs of *salt* are reported in use in China; they season the food as served.

In 1943 the state agricultural experimental stations received a total of $4,620,500 in Federal funds, plus $2,463,708 of the Bankhead-Jones special funds for research. The total made available to the stations from non-Federal sources—principally state appropriations — amounted to $15,738,633, or more than double the Federal total. USDA.

An Indoor Climate Institute has been formed by representatives of the heating and cooling equipment industries. The purpose is to improve the heating and air conditioning technique and to better public health.

Save up to $20.00 ON A FULL-SIZE ELECTRIC BROODER



Electricity plus Trumbull Equipment can make your poultry far more profitable. The two items shown here are typical. The Brooderator helps you to raise healthier, stronger chicks, and you save up to $20.00 by making your own hover. The Water Warmer aids you in producing more eggs during the season when prices are highest. Both items are built to Trumbull standards.

TRUMBULL BROODERATOR
Basic Unit—Capacity: 300 to 400 Chicks. $19.80

EGGS, EGGS, EGGS, THROUGHOUT THE WINTER!

Even below zero weather won't stop hens if supplied with pure water at 50° F.

TRUMBULL WATER WARMER
Thermostatically Controlled
Saves Labor, Saves Wear and Tear on Drinking Equipment, due to freeze-ups.

$3.84

Write us for informative literature.

THE TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Avenue Plainville, Conn.

A GENERAL ELECTRIC ORGANIZATION

Fireplace That Really Heats

Most fireplaces are more ornamental and cheerful than they are productive of heat. The fireplace shown in the illustration is in the home of Mr. and Mrs. Ralph Borsodi at their School of Living at Suffern, N. Y. The fire is built on a hearth out in the room. The entrance to the chimney for the products of combustion is through the sheet copper canopy

shown above the andirons. This canopy gets hot and radiates heat much like a stove. The radiating surface provides extra heat which is normally lost up the chimney in the ordinary fireplace. A number of these were built in pre-war times in homes at the Borsodi school.

Rats or Chickens?

The average adult rat, weighing more than a pound, eats in one year about half as much as a laying hen does, according to Dr. W. C. Thompson, head of Rutgers University Poultry Department. He adds that considering the rapidity with which they multiply, every rat killed saves forty pounds of feed, and in addition removes one source of chick mortality in the spring. The rats come in from outside to live with you in the winter. It is a good time to get rid of them.

★ ***Buy War Bonds*** ★

Questions and Answers

Auto Generator as A.C. Motor

▶**Question:** *I have heard that an automobile generator can be converted into an electric motor for 120 volt A.C. current by changing the connections in the wiring. Would you please give me particulars on how this is done? Also would it be economical to use such a motor and how much hp output could be expected from it?*

C. G. K., New York

Answer: We have heard numerous rumors that such conversions had been made, but have failed to track down any specific cases. The electric engineering experts advise us that the proposal has theoretical possibilities, provided that the field structure of the generator is laminated and that the field wiring is not too small in relation to the length of circuit to stand the passage of current without overheating. Conversion consists in putting the field wiring directly in series with the armature so as to get enough resistance, or choking effect, to compensate for the greatly increased voltage. Under the best of conditions the theoretical emergency output of such a unit is not likely to exceed 1/10 horsepower, and it is questionable whether the wiring would stand the 15 to 30 amps expected flow of current.

Even though it might be physically possible to make and operate such a converted unit for 120-volt service, it is questionable whether the effort is worth while. Fractional H.P. motors, although scarce, are still usually available, either new or secondhand, and we recommend their use in preference to the converted unit which is bound to be inefficient.

Cleaning Silted Pond

▶**Question:** *We have a lake on our place about 40 feet wide and 500 ft. long, originally about 12 ft. deep in center but has now silted full in bottom so is only about 5 ft. in center. What would be most economical method of dredging out this silt and depositing it along the bank? I would prefer a pump of some type operated by a 5-hp. motor or less. Trees along the bank would obstruct*

THE DE LAVAL SPEEDWAY METHOD OF FAST MILKING IS SWEEPING THE COUNTRY

More Milk
Time Saving
Healthier Udders

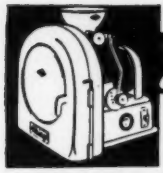
Less Strippings
Pleases the Cow
Better Sanitation

HERE IS THE METHOD

1. *Be regular*—start the milking at the same time each milking.
2. *Have everything in readiness*—avoid unnecessary noise or confusion at milking time.
3. *Preparation of cow*—Thoroughly wipe udder of each cow, just before she is milked, with a clean cloth which has been immersed in warm water (120° F.) containing 250 parts per million of available chlorine.
4. *Use of the Strip Cup*—Next, using a full hand squeeze, draw a few streams of milk from each quarter. Inspect for abnormal milk. (Steps 3 and 4 induce rapid "let-down" of the milk.)
5. *Apply teat-cups immediately after using Strip Cup.*
6. *Teat-cups should be removed from cow at end of 3 to 4 minutes.* Hand stripping should be done for purpose of inspection; draw only a few streams from each quarter — don't prolong it. Machine stripping can be done just before removing teat-cups by massaging each quarter *briefly.*

THE DE LAVAL SEPARATOR COMPANY

New York 165 Broadway | Chicago 427 Randolph St. | San Francisco 61 Beale St.



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LABOR
TIME-EFFORT

GRIND YOUR OWN FEED
WITH A VIKING HAMMER MILL

1 **LABOR FREE GRINDING:** Just fill the hopper and snap a switch. It grinds while you do other chores.

2 **LOW COST:** Grind your own grain with a Viking for as little as 1¢ per 100 pounds—and have more nutritive fresh ground grain, too!

3 **SAVES LABOR, TIME, EFFORT:** Yes, and money, too. You'll wonder how you ever got along without your Viking Hammer Mill.

NOW: A few are being made. Get yours when you need it most. Write TODAY!

VIKING MANUFACTURING COMPANY
221 EAST WASHINGTON ST. JACKSON, MICHIGAN

use of a large steam shovel type dredge. If such pumps are available or would be after the war, please give me manufacturers' addresses. J. F. Co., Okla.

Answer: A silted deposit cannot be removed by suction pumping without involving a shovel or auger head at the end of the suction line for the purpose of disturbing and loosening the silt. Equipment such as this is far beyond the practical limits of any 5-hp. motor drive.

A method suggested by construction engineers is the use of a wheeled scraper in connection with a caterpillar tractor, operated lengthwise of your basin.

One method for cleaning out such basins which is relatively cheap, quick and which eliminates the job of disposing of the silt removed consists in the use of dynamite. An expert blaster can place the charges in such a way as to remove most of the accumulated silt and dispose of it on either side of the basin for a distance of a hundred feet or more.

Motor for Separator

▶ **Question:** *How can I go about it to put a motor drive on our cream separator?* R. C., Ind.

Answer: Motor separator drives usually incorporate a friction or centrifugal clutch, permitting the motor to snap into full speed but bringing the separator up to speed gradually. This feature is usually "built-in." However, a hand operated separator can be run with an ordinary 1/6 or ¼ hp. motor, if brought up to speed with the hand crank, or if the motor has a clutch pulley or is mounted so that a slipping belt gradually brings the separator up to speed. With a standard speed motor of 1,750 rpm and a separator crank speed of 72 rpm, the crank pulley will have to be approximately 24 times the diameter of the motor pulley. A 1,160 rpm motor would permit a ratio of 16 to 1. By using a rather flexible one-inch belt on a flanged pulley of one-inch base diameter on the motor you can use a 24" x 2" face separator crank shaft pulley of either steel or wood. Mount the motor on a hinged base with an adjusting lever so that the belt is slack at the start and can be let back to the tight position when the separator attains full speed.

Filbert Huller

▶ **Question:** *I have heard of a home made device for taking stubborn hulls off filberts by feeding them between a rotating tire run inside a larger casing. The idea being that the rolling friction rubs the hulls off. Can you give me the particulars or plans to build one?*
L. E. F., Oregon

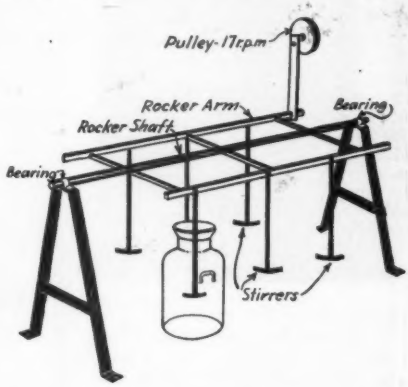
▶ **Answer:** If you will write to Mr. Charles Wildebour, Puget Sound Power & Light Company, Puyallup, Wash., you can obtain a plan for that filbert huller made from an automobile wheel and tires. The plan gives the dimensions, speeds, clearances and how to build the outfit.

Homemade Milk Stirrer

▶ **Question:** *Could you send me a diagram or plan showing how to construct a homemade milk stirrer powered with a ¼ hp motor?*
L. T., O.

▶ **Answer:** We have never published a plan for a milk stirrer because of the danger of contaminating milk when stirrers are used. When well or spring water is used for cooling, stirrers may be desirable for speeding up the cooling.

You will need some method of reducing the speed of your 1725 rpm motor in the ratio of about 100 to 1 so you will get about 17 stirrer strokes per minute. You might do this with an old pump-jack or the gear reduction from an old washing machine or cream separator; or if you cannot get a speed reducer, you can make one by using two counter shafts with pulleys on each in the ratio of 10 to 1. Or you could use



MAKOMB ELECT-O-STAT
FOR BETTER BROODING RESULTS
USES LESS CURRENT

Elect-O-Stat offers the real fan developed air conditioning that brings Best-O-Luck to your chicks. The Elect-O-Stat method (Pat. 2382860) sends vitalized tempered warmth right out to the curtains to stop any cold drafts over your 'downies'. No hot spots, no discomfort inspired crowding. 52" or 60" square, with fan. Also four other models. See your Makomb dealer. Free literature.

THE MAKOMB LINE 6 Madison Ave. Macomb, Ill.
World's Largest Manufacturer of Brooders

Get A
Gardner Hi-Line Controller

Save time, get set for more milk, beef or pork production with a Gardner hi-shock hi-line controller — the best engineered electric fence unit. Thousands are in nation-wide use, many have given six years of successful service. Ask your dealer today, or write direct for free folder.

For Sale Now!

Gardner Mfg. Co.
5313 Kansas St. Horicon, Wis.

a friction drive similar to that on the motorized buck saw shown on page 15 of our January issue.

After getting the speed down to 15 or 20 rpm, you can attach as many stirrers as you like to a rocker arm similar to that indicated in the accompanying sketch.

Homemade Concrete Mixer

▶ **Question:** *Can you furnish me information on how to build a concrete mixer out of an old 50 gal. drum and automobile parts? I want one that is dumped by a lever and* does not need to be stopped *to be filled or dumped.* B. H. G., W. Va.

▶ **Answer:** We have no plans or pictures. If any reader has, we would appreciate having them for publication.

Greenhouse Heating & Ventilation

Question: *I have a small greenhouse, 6 ft. x 9 ft., attached to my garage. Would it be possible to heat this with an automatic electric water heater? If so, how many feet of ¾in. pipe would be needed for the heating pipes? What kind of a thermostat would be needed in the room to control the temperature of the air? The water heater control would not do this.*

Also please inform me where I can secure information on an automatic ventilator for opening the windows when the heat from the sun increases the temperature of the room.

W. H. F., Texas

Answer: For small greenhouse units a hot-water system is preferred to steam. The smallest size pipe recommended for a gravity circulation system is two inches. This is to insure sufficient radiation service and a uniform temperature throughout. Heating pipes should have a minimum pitch of ½" in 10'. For general use a greenhouse heat range between 50° and 55° F. is normal. To figure length of pipe, obtain the total square footage of exposed glass area. To this add ⅓ the area of walls or other surfaces not in glass; divide this total by 2.06 to get lineal feet of 2" pipe needed. If a temperature range of 55° to 60° is desired, divide by 1.78 instead. The above calculation is for zero degrees standard outdoor temperature. If outdoor temperatures get no lower than 20° above zero, multiply the basic pipe footage obtained above by .66; if 30° by .5. These standards are based on a water temperature of 150° in the pipe system.

With electric heating available, I would use space heaters throughout this greenhouse in preference to indirect hot-water heating with electric energy. Or you can use an ordinary room heater equipped with integral fan. This will insure uniform temperatures throughout this small greenhouse, will provide desirable circulation and can readily be thermostatically controlled by a simple wafer or bimetallic element.

Automatic temperature control of roof ventilating sash is obtained in large installations through the use of thermostatically controlled Selden motors and appropriate gearing. For your size house, such equipment might exceed the cost of the structure. You might try using a compound wafer element or a bimetallic strip to actuate, through appropriate leverage, a sash section pinned to counterbalance.

Power from Brook

▶ **Question:** *I have a summer house in the Wisconsin north woods. The nearest electric line is five miles away. We have a brook on the place and was told to put on a water wheel for electricity. I have a diagram for the wheel, but no information on the generator. Our appliances are all 110 volt. Have you any diagram on generators or can they be bought for this purpose. Would I need any storage batteries? Kindly give me full information as to what would be necessary to get electricity on my place?*

G. J. P., Ill.

▶ **Answer:** Any small generator used on a 110 volt farm lighting plant or for industrial purposes, will be satisfactory to use with a water wheel providing you can gear or belt the wheel to the generator so it will run at proper speed. Direct current generators are customarily used and should be used unless you wish to operate alternating current motors or devices having alternating current requirements. In the latter case, you will need an exciting generator along with your alternating current generator. The General Electric Company, Westinghouse Company make generators which would answer the requirements. It is very doubtful whether you could buy one of them during the war period.

You would not need storage batteries with this generator if it could be operated at the time you need current.

The Fitz Waterwheel Company of Hanover, Pa., and the Brook Water Wheel Co., Orange, Mass., make water wheels and small turbine driven electric plants of a type which would answer your requirements.

Our last June issue gave informa-

VOGEL
PATENTED
FROST-PROOF HYDRANTS
- Ideal for farms
- Will never freeze
- More than 50,000 in use

JOSEPH A. VOGEL COMPANY
Wilmington, Delaware

Your nearest supply house handles Vogel hydrants or writes us direct for complete information.

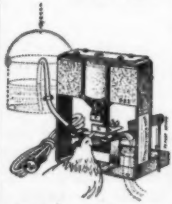
"Keep 'em Frying"

If you are using a Monarch Range — write for free booklet entitled "How to Care for your Monarch Range"—mentioning the kind of fuel you use.

MALLEABLE IRON RANGE CO.
1243 Lake St. Beaver Dam, Wis.

MONARCH RANGES
are built to last

SAVE LABOR
ELIMINATE WORRY
Use the Lyon Electric Line



Plan now to obtain the advantages which additional Lyon Equipment will give. If you are a Lyon user, you know the long service and low cost operation which LYON Equipment offers. Moreover, Lyon repairs for poultry equipment have been available continuously. The Lyon Debeaker and Lyon Brooder Assemblies are typical Lyon Labor-and-worry-savers.

Send for Details

LYON RURAL ELECTRIC CO.
Greensboro, N. C. San Diego, Calif.
"Headquarters for Electric Brooder Assemblies"

Three Ways to Water—It takes time, but electricity almost always gets the job to do, when the last stage of development comes up. Shown in the illustration are three stages in water supply history on the Helwig Poultry Ranch near Petaluma, California. First the windmill did noble service for many years, while the flock was small. Then, as the flock grew larger, the wind didn't blow enough, so an engine had to help out. Then there wasn't enough pressure to put water up to new poultry houses on the hill, so a modern electric pressure system had to take over. Since then nobody has to remember to turn this on, or shut that off. It 's all automatic. The hens' drinking troughs are always full even if the wind doesn't blow, and it takes a lot of water for 6,000 thirsty hens. —T. W. Christensen.

tion on the power developed by small streams. There is no chance for you to get a power line extension under present WPB rulings.

Good Wiring is Safe

. . . . . (Here from page 8)

requested that the cows be sheared, so they installed wiring from the house to the barn using BX cable inside the barn. A safety switch was installed inside the barn and a 15-ampere fuse was used. The wires were connected at the house to the leads from the 3-way switch without advising the owner, so that by throwing the switch the neutral wire to the barn was connected to the live circuit. The BX, or armor covered wire, was also installed in such a way that it touched the steel stanchions.

"Some time during the evening when this wire was installed, the housewife inadvertently snapped the switch which changed the connection of the line feeding the barn and put a charge on the neutral wire and the steel armor of the cable which in turn connected to the stanchions. Five cows valued at approximately $1,600 were killed instantly.

"Our company carried on a complete investigation to determine the cause. The switch box and the neutral wire at the barn were grounded with a 10-ft. ground rod and the armored cable was properly bonded to the switch. The ground rod was pulled up and was found to have been installed properly. In addition the rod was apparently buried in very moist soil. However, the ground was insufficient to blow the 15-ampere fuse. Carelessness in making the freak hookup to the switch in the house was the actual cause of the loss of these cattle." If the stanchions had been grounded so the current could have found a less resistant path to the ground than through the cows, they might have been saved. "Our experience with grounds throughout our system has taught us that in this locality, it takes multiple grounding to blow the average fuse."

H. E. Antle, Boone County REMC

Saphire and *ruby* are varieties of the mineral corundum which is aluminum oxide; they differ only in color.

New Publications

(*Publications are obtainable from the addresses given in the description. Some states make small charges for bulletins sent outside the state.*)

- FARM BUILDING REPAIR. Circ. 279, Ag. Exp. Sta., Columbia, Mo. 20 pages with excellent drawings showing how to repair foundations, grain storage, siding and framing, sills, wood and metal roofs, bracing, doors, ventilation and lightning protection.
- LIGHT CONSERVATION BOOKLET. 8 pp., illus. Price 1c. Westinghouse Lamp Division, Bloomfield, N. J. How to get the most out of your lights while saving current.
- TWO NEW CATALOGS. Brower Poultry Equipment. Brower Mfg. Co., Quincy, Ill. Peerless Pumps. Deep well turbine and propeller pumps for irrigation. Bul. 141A. Peerless Pump Co., 301 W. Ave. 26, Los Angeles 31, Cal.

20/20 Vision

Have you wondered what the eye tester meant when he sail you had 20/20 or 20/30 vision? It refers to the Snellen vision test used by the Army, Navy, Civil Service and most organizations that test eyesight. Snellen determined what was the smallest object that the average eye could resolve at a given distance. Since eye tests are usually given indoors in limited space, letters have been designed and placed on a test chart for reading at twenty feet. If you can correctly read the letters with your right eye that the average person is supposed to distinguish at 20 feet you have 20/20 vision in your right eye. If your left eye can only read at 20 feet the letters you are supposed to distinguish at 40 feet, you have 20/40 vision in your left eye.

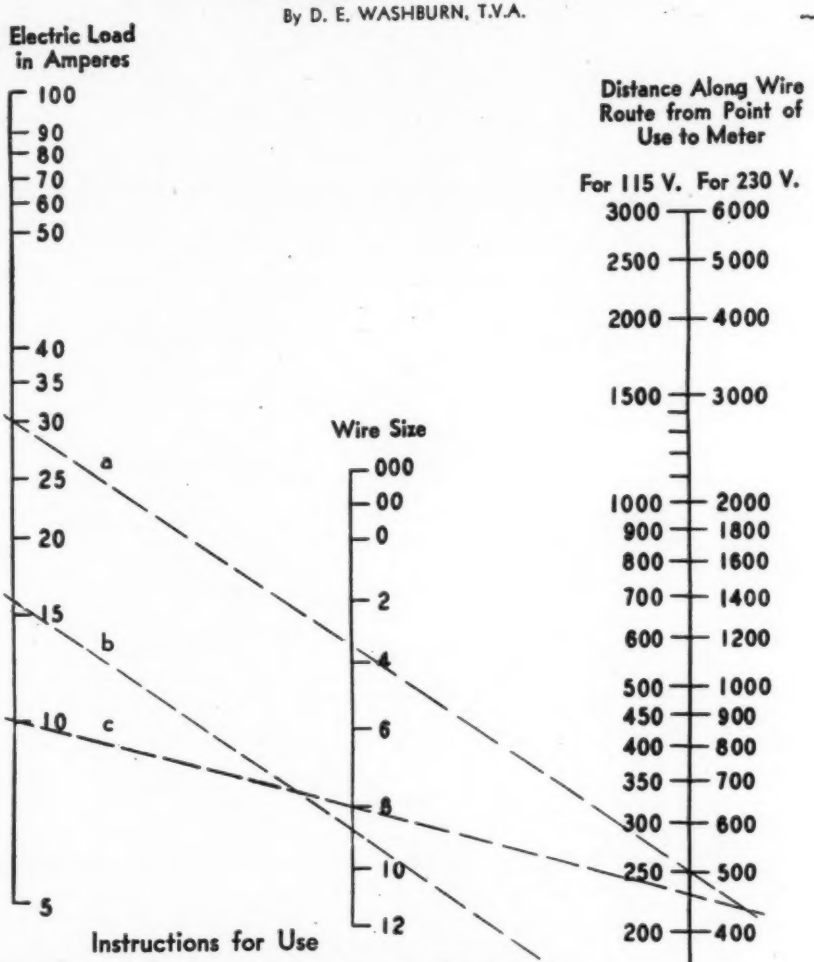
CLASSIFIED ADVERTISING

WRITE FOR BROWER'S BIG FREE CATALOG describing complete line of electric poultry equipment. Brower's Electric Watt-Saver fan-type Floor Brooder. Has insulated canopy. Ideal for cold or warm weather brooding. Automatic thermostat switch. 300 chick capacity, 46" x 46" canopy, 800 watt heater—$27.50. 500 chick capacity, 60" x 60" canopy—1000 watt heater—$32.70. 250 watt Infrared ray heating bulb to use in homemade brooders—$1.75. Automatic thermostat brooder switch—$2.30. Chick Starting Batteries—water heaters—time switches—incubators and feed mixers. Brower's—the World's Largest Line of Poultry Supplies—normally over 475 items. Save delay, order now. BROWER MANUFACTURING CO., Dept. 65, Quincy, Illinois.

WIRE SIZE SELECTION CHART

Based on 3% Voltage Drop

By D. E. WASHBURN, T.V.A.



Instructions for Use

Lay a straight edge across the chart connecting any two known values. Where the straight edge crosses the third line, read the desired figure.

Example 1. You wish to build a new line to the milk house. In the milk house you will use a water heater, 200 watts in lamps and a ¾ hp motor, having a total connected "load" of 30 amperes. The "distance" including extension cords, inside and outside wiring from the farthest point of use to the meter is 250 ft. If appliances are 115 volt, the straight edge should be placed at "a", connecting 30 amperes to 250 ft. on the scale for 115 volts. It crosses between 2 and 4. No. 4 wire would be too small. Use No. 2.

Example 2. Now, if you were to use the motor and water heater above on 230 volts, the ampere "load" would be only about 16. The straight edge placed at "b" crosses between 8 and 10. Use 3 No. 8 wires.

Example 3. You have some No. 8 wire. Your 115-Volt brooder uses 10 amperes. How far away from the meter can you use it. Place straight edge at "c" connecting 10 amperes and No. 8 wire. On the "distance" scale for 115 volts, you will get the answer, 230 ft.

(Reprinted from July, 1941)

"Christmas Is Different This Year!!"

THIS year will be remembered for its uncertainties and for the sacrifices many have made for the common good. But this December we can see light ahead and if we all pull together, we can be reasonably sure that 1944 will see our country well on the way toward Victory.

Your part is to produce more food than ever before and you have done that well despite lack of help and equipment. Do not falter.

Our part of the job is to continue to supply reliable electric service to factory and farm, to be prepared for all possible emergencies, and to assist our customers in getting the greatest possible benefit from electricity. It's in this connection that we send you this magazine, which we hope you are finding helpful as well as interesting.

Santa's advice for this year is to GIVE WAR BONDS and STAMPS for Christmas presents; then so much sooner shall we all return to the task of beating our swords into plowshares and our spears into pruning hooks.

Your Electric Service Company

ELECTRICITY ON THE FARM
24 West 40th Street
New York 18, N. Y.

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